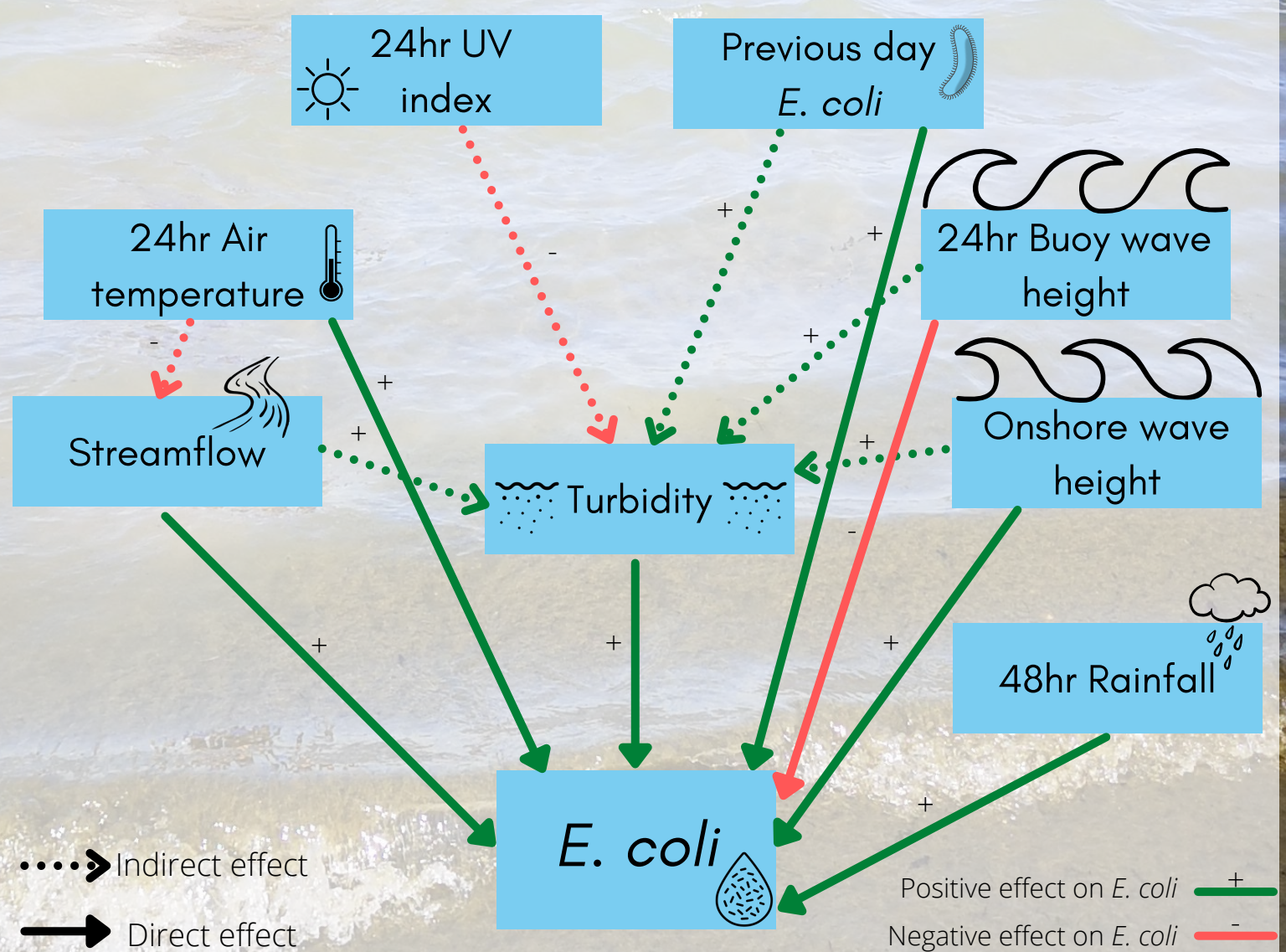# Environmental Factors Affecting *E. coli* Levels at Niagara Beaches

A path analysis investigation

Researchers investigated how environmental factors are associated with increased levels of *E. coli*, an indicator a fecal contamination, at 8 beaches in Niagara Region with data collected from 2011 to 2019 using path analysis. Path analysis is a statistical method for examining causal patterns among variables and how they influence one another.

Path Analysis Results

24hr UV index

Previous day *E. coli*

24hr Air temperature

24hr Buoy wave height

Streamflow

Turbidity

Onshore wave height

48hr Rainfall

E. coli

+ + + + + + + + + - - -

······▶ Indirect effect

───▶ Direct effect

Positive effect on *E. coli* ───

Negative effect on *E. coli* ───

Beach Specific Factors Matter

The above diagram represents factors important for all beaches, but each individual beach has a unique set of key predictors. However, turbidity, yesterday's *E. coli* levels, air temperature, and wave height were important at all beaches. Outfall was important but was present at few beaches.

We suggest public health authorities routinely collect data on these factors and evaluate sources of contamination using beach environmental surveys to guide targeted mitigation strategies

Prepared by Cole Heasley, Johanna Sanchez, Ian Young, Jordin Tustin, 2021

Toronto Metropolitan University

Read full article here: